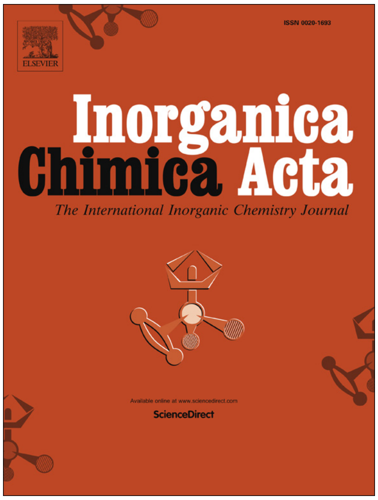

Phenoxazinone synthase activity of two iron(III) complexes comprising the same Schiff base ligand: Biomimetic functional model and mechanistic investigation

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New title: Phenoxazinone synthase activity of two iron(III) complexes comprising the same Schiff base ligand: Biomimetic functional model and mechanistic investigation

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ABSTRACT

A new 4,4′-bipyridine (4,4′-byp) mediated 1D- polymeric Fe^{III} complex (complex **1**) of Schiff base ligand H_2L, a 1:2 condensation product of 1,2-diaminopropane and salicylaldehyde, has been synthesized. Complex **1** is structurally characterized by single crystal X-ray diffraction. A phenoxo bridged dinuclear Fe^{III} complex (complex **2**) of analogous ligand has been synthesized also. Dioxygen activation in terms of Phenoxazinone synthase activity using *o*-aminophenol (OAPH) as a model substrate catalyzed by both the complexes are thoroughly investigated here. ESI-MS spectral study reveals that polynuclear complex **1** dissociates into mononuclear units while dissolve in methanol during catalytic study. The kinetic study illustrates that both the complexes have well competence towards *o*-aminophenol oxidation where dinuclear Fe^{III} species demonstrate higher activity than mononuclear intermediate species. Important finding from the